

PUBLIC HEALTH FACT SHEET

Insect Bites and Insect Repellents

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Why do some insects bite?

Some insects “bite” because they use animal blood to make eggs when they reproduce. Some also need to drink blood to grow.

What problems can be caused by insect bites?

Ordinarily, insect bites are just a nuisance. Most people become very uncomfortable when insects are found crawling on them or flying around them. Outdoor activities can be disrupted. Some bites may actually cause pain. In rare situations, an insect bite can serve to transmit certain diseases. In Massachusetts, some mosquitoes can transmit eastern equine encephalitis (EEE), and some ticks can transmit Lyme disease (LD), human granulocytic ehrlichiosis (HGE), and Rocky Mountain spotted fever (RMSF).

Only a few of the many types of mosquitoes in Massachusetts can transmit the EEE virus. Of those that can, only a small portion are actually infected. Only one type of tick can transmit LD. The same is true for RMSF. It is thought that HGE is only transmitted by two species of tick. Only a few of each of those types of ticks are ever infected at any one time. Thus, being bitten by a mosquito or tick does not mean a person will become sick.

What is eastern equine encephalitis (EEE)?

EEE is a rare but serious viral disease. Typical symptoms include high fever, stiff neck, headache and lack of energy. Swelling of the brain, called encephalitis, is the most dangerous symptom. Fewer than 80 cases have been reported in Massachusetts since 1938, with most occurring in the southeastern part of the state.

What is Lyme disease (LD)?

LD is a bacterial illness spread by the bite of the deer tick. The initial symptom is an expanding rash at the site of the tick bite. If untreated, the bacteria can infect almost any site in the body. Most often, it will cause arthritis, neurologic difficulties, and/or heart problems. It is treatable with antibiotics. Cases occur year-round throughout Massachusetts, but most frequently occur during warm weather on Cape Cod and southeastern Massachusetts, the islands of Nantucket and Martha's Vineyard, in areas north of Boston, and along the Quabbin Reservoir watershed and the Connecticut River Valley in western Massachusetts.

What is Rocky Mountain spotted fever (RMSF)?

RMSF is a bacterial illness transmitted by the “dog” tick. The disease typically appears as a high fever with severe headache and tiredness. A rash that spreads to the palms of the hands and soles of the feet occurs in about half of all cases. Antibiotics can be effective. Cases occur in the warm weather and most frequently on Cape Cod and in central Massachusetts.

What is human granulocytic ehrlichiosis (HGE)?

HGE is a bacterial disease that affects certain white blood cells called granulocytes. It typically appears suddenly, with fever, headache, muscle aches, chills, sweating, nausea and vomiting. Antibiotics are effective in treating this disease, but because symptoms can rapidly become life threatening, immediate treatment is necessary. Cases of HGE in Massachusetts have been seen in tick-exposed residents of Cape Cod and the Islands.

How can mosquito bites be prevented?

- Wear long-sleeved shirts and long pants.

- Stay indoors at dawn and dusk when mosquitoes are most active.
- Use mosquito netting on baby carriages or playpens when the baby is outdoors.
- Make sure screens are repaired and are tightly attached to doors and windows.
- Mosquitoes that bite people often breed in stagnant water, so don't let water collect around your home. Check ditches, gutters, old tires, wheelbarrows and wading pools.
- Don't camp overnight near freshwater swamps. If you do camp, use a tent with mosquito netting.
- Use mosquito repellents and follow the directions on the label.

How can tick bites be prevented?

- Wear light-colored, long-sleeved shirts and pants. It's easier to see dark ticks crawling on light backgrounds.
- Tuck pant legs into socks to reduce contact with low-lying brush that ticks inhabit.
- Check for ticks once a day. Their favorite places are in the armpits, along the hairline, in or behind the ears, and on the legs, thighs and groin. The ticks may be small, so look for new "freckles".
- To remove a tick, use fine point tweezers to grasp the tick firmly as close to its mouthparts as possible and pull straight out. If you must use your fingers, protect your fingertips with a plastic bag or tissues and wash your hands afterwards.
- Use repellents and follow the directions on the label.

What precautions should be taken with repellents?

Repellents can be absorbed through skin and in rare instances can cause sudden illness. Therefore, don't over apply repellents, and avoid using products with more than 10-15% DEET on children and more than 30-35% on adults. When using repellents on young children, do not apply to their hands or faces, as children may get repellent in their mouths. Don't use repellents on infants. Repellents containing permethrin are approved for use on clothing ONLY. Wash treated skin after returning indoors. Do not overapply repellent, do not apply to broken skin and do not apply under clothing. Avoid applying repellents in closed spaces (cars, tents).

What should I do if I have an adverse reaction to a repellent?

If you suspect that you or your child is having an adverse reaction to an insect repellent, wash the treated area, remove treated clothing and call the local poison control center. In Massachusetts, the number of the Poison Control Center, which operates 24 hours a day, is (617) 232-2120. If you go to the doctor, take the repellent with you. The label information may be useful to your physician. If you or your doctor need specific medical information about the repellent, call the National Pesticide Telecommunication Network (NPTN) at (800) 858-7378, Monday through Friday, during business hours. You can access their website at <http://ace.ace.orst.edu/info/nptn/index.html>.

Where can you get more information?

For further information on any of these diseases:

Massachusetts Department of Public Health, Division of Epidemiology and Immunization (617) 983-6800 or toll-free at 1-888-658-2850 or the MDPH website at <http://www.state.ma.us/dph/>

For information on regional mosquito control programs:

Massachusetts Department of Food and Agriculture, State Reclamation and Mosquito Control Board (617) 348-4061

For information on pesticide use:

Massachusetts Department of Food and Agriculture, Massachusetts Pesticide Bureau (617) 626-1786